# FOREWORD

## A paradigm shift is needed in learning and practice for garbage-free and waste-wise cities

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India's tryst with garbage – the waste from the use of materials in homes, institutions and factories in its cities – is evolving sharply in policy and practice. This change needs to be recognised and disseminated, so that waste does not add to contamination and become a public health menace. Instead, waste should become a resource, to be reworked, reused and upcycled. This will minimise the use of materials in our world, as well as mitigate environmental damage. It is a win-win scenario. This set of case studies on best practices documents what is being done to make this change happen on the ground.

This, when we know that the 'nature' of solid waste changes as societies get richer and more urbanised. Instead of biodegradable (wet) waste, households generate more and more quantities of plastics, paper, metals and other non-biodegradable (dry) waste. The quantity of the waste (on a per capita basis) increases as well, as wealth increases in society. India has crossed the crux of this waste trajectory in many of its urban areas where waste generation has increased exponentially.

It is estimated that urban India generates between 1,30,000 to 1,50,000 metric tonne (MT) of municipal solid waste every day – some 330-550 gramme per urban inhabitant a day. This adds up to roughly 50 million MT per year; at current rates, this will jump to some 125 million MT a year by 2031. What is also of concern is that not only is the quantity increasing, but the composition of waste is changing – from high percentage of biodegradable waste to non-biodegradable waste. The waste characterisation determines the strategy for its management. And then there is the problem of legacy waste lying in dumpyards scattered across cities. It is estimated that some 800 million MT has been 'disposed of' in the 3,159 dumpsites across the country, according to data from the Central Pollution Control Board (CPCB).

But the good news is that there is complete transformation in the policy for waste management in the country. In the year 2000, when the first Municipal Solid Waste Rules were notified, they were based on the idea – prevalent in most countries of the world at that time – that waste had to be collected, transported and then disposed of in secure landfills. The objective was to 'clean' cities of waste by removing it from the vicinity. This policy failed in practice and mountains of waste grew in our cities. What could not be collected or transported because of paucity of municipal services fouled up our streets and neighbourhoods.

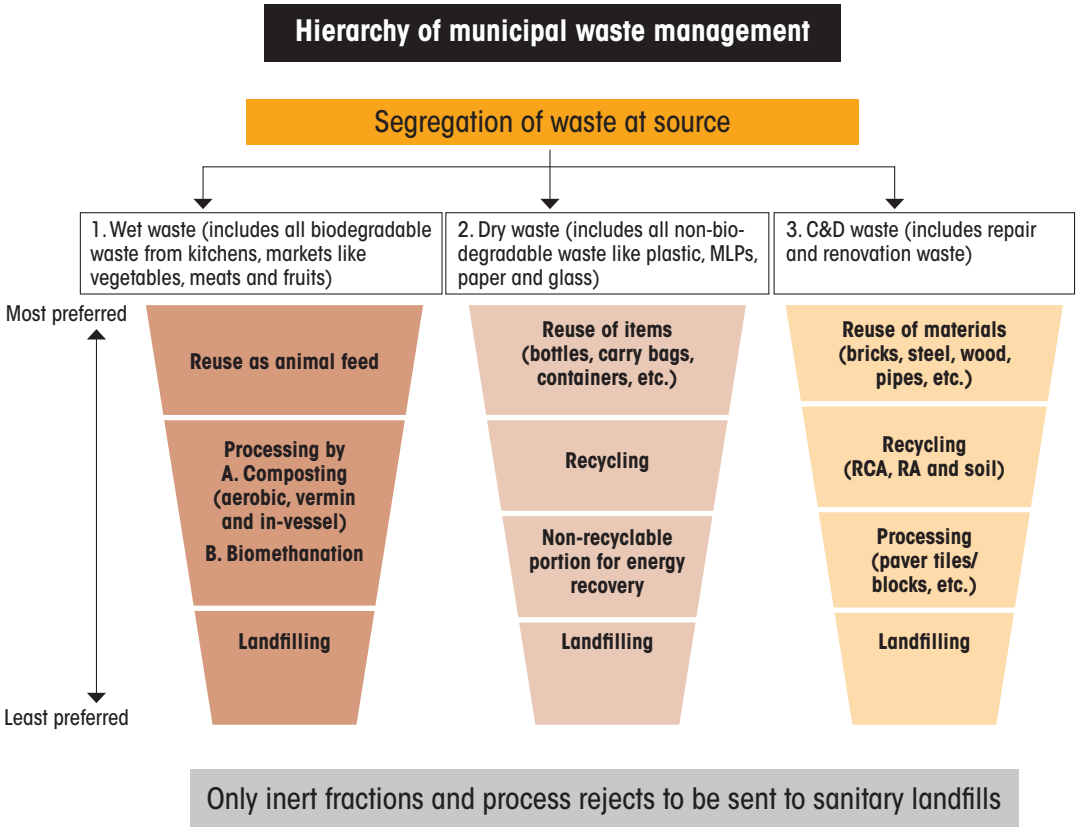
In 2016, Centre for Science and Environment (CSE) published *Not In My Backyard: Solid Waste Management in Indian Cities*; the book was released by then Union minister for urban development and currently the honourable Vice President, Shri M Venkaiah Naidu. This book, which researched the problem of municipal solid waste in the country, brought out the need for a paradigm shift in management. It recommended that India must not use scarce and prized land for disposing of waste. Instead, waste should be treated as a resource and a strategy must be designed for material recovery and reuse.

But what was also clear is that material recovery is not possible without segregation – and that this sorting of waste streams is best done at the household level or at source. The opportunity is to build safe livelihoods from processing of this material wealth. It was also found that whereas in the past, waste could be dumped in the backyards of poor communities as the richer sections of society said '*not in my backyard*'. This scenario was now changing – increasingly and rightly, the poor too were saying '*not in my backyard*'. This essentially meant that it is no longer possible for city planners to find new lands for landfill sites. This was the 'nudge' for correcting policy and practice, as waste needed now to be processed and recycled so that it would no longer be dumped in the backyards of the rich or the poor. We argued that this '*not in my backyard*' of the poor needed to be celebrated so that policy could be reworked.

Over the past few years, there has been a rapid shift in the strategic direction of waste management in the country. The flagship programmes of the Government of India – the Swachh Bharat Mission, the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and the Smart Cities programme – have all created an enabling environment to drive this transformation.

The Swachh Bharat Mission (SBM) 2.0, launched on September 1, 2021, is now based on a clear strategy for solid waste management in cities – a strategy that focusses

## Components of MSW management – the hierarchy



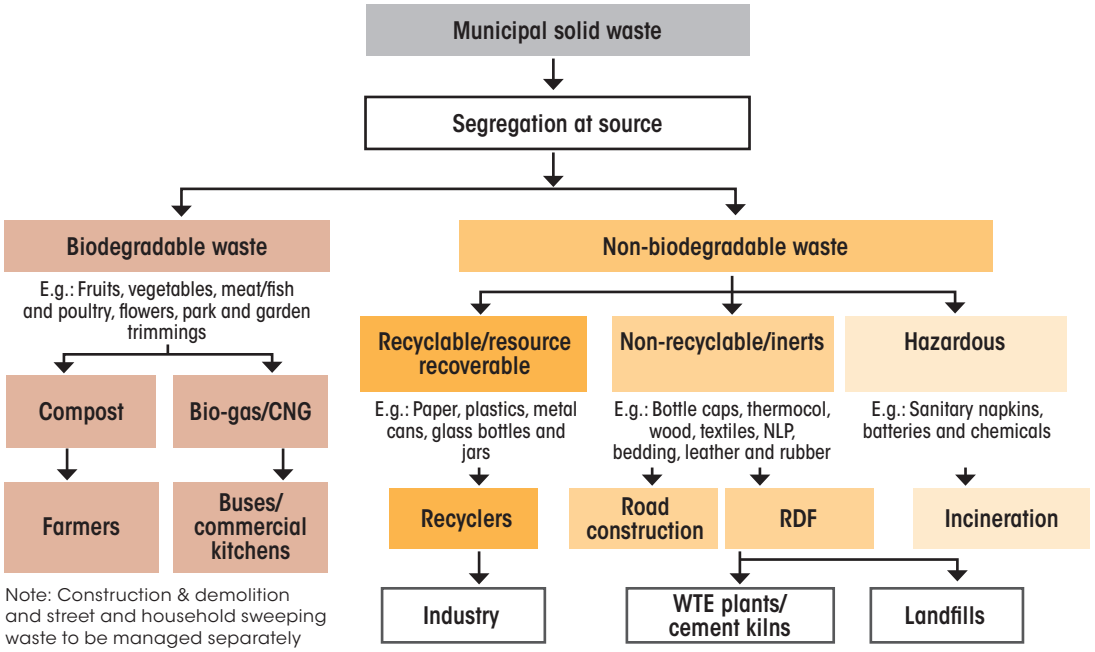

Source: Guidelines for Swachh Bharat Mission (urban) 2.0, 2021

on source segregation, processing of waste (biodegradable and non-biodegradable), and minimising the waste that is sent to landfill sites. According to the guidelines of SBM 2.0, only the inert waste and process rejects – in no case to exceed 20 per cent of the total waste – which are not suitable for either biodegradable and non-biodegradable waste treatment, can be sent to landfill sites. It, therefore, works towards a zero-landfill city concept in the country (see Figure: *Components of MSW management – the hierarchy*).

In terms of management of waste, the guidelines stress that waste-to-energy projects are financially and operationally viable only with assured input of a minimum 150-200 tonne per day of non-recyclable, high calorific value segregated non-biodegradable waste. This has also been our learning as waste-to-energy (WtE) plants are not the silver bullets that they promise to be. The experience in setting up these plants has shown that it is critical that the waste that is sent for incineration for energy generation is high quality; this requires high level of segregation – best done at source. Without this, the plants end up working below their operational capacity and become defunct.

SBM 2.0 also emphasises the need for plastic management – working towards minimising single-use plastic, and operationalising recycling and reuse through processing. This remains an area of further work as it is clear that the scourge of plastic waste needs effective strategies for identification of single-use and non-recyclable plastic. This then needs to be phased out. We also need a better understanding of what recycling of plastic waste entails. This requires cities to provide enabling conditions for safe and environmentally friendly recycling facilities.

## Components of MSW management – different types of waste and where they end up




Source: Guidelines for Swachh Bharat Mission (urban) 2.0, 2021

The other big opportunity – but a challenging one – lies in remediating the legacy waste in dumpsites. There is much to learn from city experiences on what is being done and what more is needed to ensure that not only are existing dumpsites cleared of their waste, but also that new dumpsites are not created – these mountains of waste in our cities are unacceptable.

Swachh Survekshan – India's benchmarking and ranking tool – has also evolved to capture the measures that take a city towards source segregation, material reprocessing and zero-landfills.

India's solid waste management strategy is now designed for material recovery and reuse. It is an approach towards a truly circular economy. The fact is that as we learn what we cannot recycle, we will have to work towards minimising its use – this will make policy and practice even more environmentally friendly as it will demand full reutilisation of materials and no waste.

This said, it is clear that while policy has evolved, practice has still to catch up. We need to upscale this paradigm shift across the country: every small or big city and village must be waste-wise.

This needs learning. This needs sharing of experiences on what is working and what is not. Currently, we know that source segregation remains an Achilles' heel – it does not happen at the scale and pace needed. Even if waste is segregated at the household level, it does not get transported in a segregated manner to the processing facilities. In fact, processing happens incidentally, only because there are people who need our waste for their livelihoods – ragpickers, as we call them. City managers are still working through the different options for processing, and to manage these effectively for revenue generation. Worse, plastic waste – particularly much of the packaging waste – is growing and filling our cities. We certainly need a course correction.

The fact also is that we are in an exciting phase of development, where city managers and leaders are indeed learning from ground experience; they are reworking their strategies and implementing change at scale. These cities are our inspiration, as well as our textbooks for learning.

In 2017, CSE started the 'Forum of Cities that Segregate' to create a platform for showcasing city-wide success stories and to develop a knowledge-exchange hub. This then works to build internal capacities, to assess progress, to provide handholding support and to document the best practices to use as an effective instrument for training and exposure.

We are delighted to have had this opportunity to partner with NITI Aayog to take this initiative forward and to ensure that constant learning of best practices and their application will make our cities garbage-free and waste-wise.

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